NASA KSC/Intern Abstract – 07/21/16

Modify Vehicle Assembly Building High Bay 3 for SLS - Internship

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Academic Major: Civil Engineering

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Mentor Job Title: Civil Engineer

Organization Branch/Division: Construction of Facilities / Structural & Launch Accessories

Directorate: Engineering and Technology, NE

Opportunity Title: Civil Engineer – Construction of Facilities

Abstract:

The primary purpose of the Vehicle Assembly Building (VAB) HB-3 is to provide an enclosed and controlled environment to stack NASA's Space Launch System (SLS) rocket, which will launch from Kennedy Space Center (KSC) in November 2018. A total of 10 levels of work platforms (A-K) 20 platform halves altogether, are being installed in the High Bay 3 (HB-3) at pre-determined elevations of the SLS rocket to provide access needed for launch preparations and ground support. In order to ensure that the platforms will extend and retract, drive chain rail activators were installed on the corbel rails which support the platforms. The design is similar to a cabinet drawer extending and retracting. Each platform dimensions are roughly 38' long and 62' wide and attached to T-rails in order to give them the capability of moving up or down as required by the engineers. Using an overhead crane system that is able to lift up to 325 tons and spreader beams level K currently stands about 86' above the VAB floor Level A will stand about 346' above the VAB floor. Mechanical, electrical, and plumbing systems prepared in the HB-4 and Transfer Aisle to then be lifted by the overhead cranes to the HB-3 serving as the "home" of the SLS. As part of the VAB's upgrade, new infrastructure and reinforcement has been added to HB-3 to add structural support to the building. In addition, repairs and upgrades have been applied to the vertical-lift doors in order to provide access to HB-3 for the mobile launcher (ML) and upgrades to low-voltage power sources in the HB-3.

During my OSSI-NIFS internship I have had the opportunity to work with NASA's construction management team I have not only gained knowledge on the structural engineering scope of the HB-3 project, but have also learned how team is able to efficiently work through handling and delivering process. The deliverables during my internship involved current issues on the project. The team required an effort to identify corrosion issues to track quality and mitigate potential schedule impacts during the turnover process. I created a punch list of issues that were detected through pictures of current issues, specified location, and referenced specs section that will follow up with repairing processes such as repaint and IOZ recoating.

I tracked down a vast majority of the request for information (RFI) documents provided by the contractor whenever changes were made to the original blueprints of the HB-3 project. RFI gives the contractor the opportunity to contractually ask questions about contract documents. I had the opportunity to lead and/or join different inspection walk-downs such as: arrival, quality, pre-

lift, drywall, reinforcement, and T-rails. These inspections were valuable information for our weekly lift-readiness team and quality meetings, since they were identifying different issues required prior to turnover acceptance. During these meetings, I was able to expand my network, gain knowledge of AISC code, and acquire some expertise on welding and bolt inspections. With the help of my mentor I was also able to dilate my network and knowledge throughout the different center visits. The visits helped me obtain a different perspective of how KSC integrates the different facilities and resources for the SLS rocket. I also had the chance to experience unique events such as the rocket launches that occur at KSC: Delta IV Heavy, Atlas V, and Falcon 9 with Dragon Capsule.

Being part of the HB-3 project has given me enough experience to know I want to develop my career in a place full of opportunities, diversity, and history such as NASA. The project's focus on Structural Engineering is what motivates me the most. It has given me knowledge I would only obtain on higher level courses, given the fact that I am a sophomore. I have had the benefit to learn different skills such as reading blueprints efficiently, gain experience on American Institute of Steel Construction (AISC) code regulations, weld design symbols, Pre-stressed Concrete Institute (PCI) and lots of experience on leadership and networking skills.